FIELD OF THE INVENTION

~~The present invention relates generally to passenger vehicle supplemental restraint systems, commonly known as air bags. More specifically, the present invention relates to a supplemental restraint system that detects the weight of a passenger in a motor vehicle and alters the air bag response in the event of a collision based upon the weight of the passenger.~~

The present invention relates to at least a weight sensing unit that is operatively secured beneath one or more seats and communicatively connected to a vehicle's supplemental restraint system

BACKGROUND OF THE INVENTION

~~The advantages of the supplemental restraint~~ systems ~~system, in passenger vehicles, in combination with the use of seat belts have been well appreciated. Air bags are among the most successful safety devices in motor vehicles today. The use of air bags in modern vehicles is fast becoming an absolute standard.~~

~~Recently, however, a problem has arisen which presents both real and perceived hazards in the use of air bags. Although air bags are primarily designed for the benefit of adult passengers (.), when children or infants are placed in the front passenger seat, deployment of an air bag can and has caused serious injury. Automobile manufacturers, realizing this hazard, have recommended that children and infants only ride in the rear passenger seats of an automobile.~~

~~According to the National Highway Transportation Safety Board, "smart" technology air bags should be in place starting with motor vehicles built in 1999. In short, "smart technology" air bags that adjusts air bag deployment to accommodate the specific weight considerations of the passenger who would be affected by its deployment is needed. The result is that small passengers are less often injured by the deployment of airbags.~~

~~While air bags have been credited with saving thousands of lives, the tremendous force of air bag deployment has also caused many injuries. Air bags have been blamed for deaths of many children and adults in low-speed accidents that otherwise would have been non-fatal.~~

~~Placing infants and small individuals in the front passenger seat of automobiles has led to some serious, but avoidable, tragedies. Unfortunately these accidents have had a secondary effect in that the public is beginning to perceive air bags as inherently dangerous and has begun to believe that they should be selectively disabled, if installed at all. In light of the statistics, however, airbags have resulted in a net increase in lives saved. Therefore, measures short of disabling or not installing air bags are needed.~~

~~Inevitably, children will be placed in the front passenger seats of automobiles, whether due to ignorance of the hazards or simply due to the need to fit a certain number of passengers in a particular vehicle. Therefore, the solution lies in adapting the supplemental restraint system to adjust the deployment force of airbags to compensate for the presence of smaller passengers. It should also be noted that, while less likely, smaller adults also may be injured by the deployment of an air bag. The most obvious solution to the problem, which is popular with the public, is to provide for the disabling of the air~~

~~bag. This solution has several problems. First, the operator may forget to disable the air bag when it should be disabled. Second, the operator may forget to enable the system when its protection is desired. Finally, entirely disabling the system deprives children and smaller passengers of the benefits of air bags.~~

~~In order to avoid some of the above problems, related prior art has incorporated measurement systems into the seats of some vehicles to gather information about the passenger and to operate the air bag in accordance with that information. These systems generally represent a simple "on" or "off" selection. For example, if a passenger is not located in the seat, or does not trigger certain secondary detectors, the restraint system may be disabled. If the detector properly senses a passenger in the vehicle, the air bag is simply enabled.~~

~~There is a need for a better solution.~~

Weight sensing systems for use with supplemental restraint devices are well known in the art. One such weight sensing system includes sensors positioned in the sitting surface of a seat. These sensors are engaged only when the seat cushion is deflected.

The present invention discloses a weight sensing unit that is secured beneath one or more seats in a vehicle. and which is communicatively connected to the vehicle's supplemental restraint system through a computerized system to enable controlling the deployment force and acceleration used to inflate airbags more intelligently, such that the corresponding weight of each seated occupant is measured by the weight sensing unit and a corresponding electrical signal is enabled so that the deployment force of the airbag is determined.

SUMMARY OF THE INVENTION

~~The present invention is an improved a supplemental restraint system for a vehicle that has a weight-sensing unit mounted to one or more seats for sensing the weight of a sitting occupant, a computerized system for calculating an operating weight value corresponding to that weight, and an airbag system comprising one or more airbags and a deployment unit, the deployment unit configured to inflate the airbags with a deployment force and acceleration proportionate to the operating weight value when a sufficient collision force is sensed by a collision sensor.~~

The present invention is a supplemental restraint system consisting of one or more weight sensing units, each operatively secured beneath one or more seats in a vehicle. The weight sensing unit is communicatively connected to the supplemental restraint system through a computerized system so that the deployment force and acceleration of an airbag is intelligently controlled. The deployment force of the airbag is determined proportionately based on the weight of the occupant occupying the corresponding seat. The present invention further consists of the disclosure of weight and mass as equivalent for achieving proportionate deployment force and acceleration for the airbag.

The weight sensing unit comprises a load cell secured beneath the seat. Each of the load cell is configured with one or more strain gages configured to sense at least a force applied to them when an occupant sits on the seat. These strain gages are designed to strain due to the force acting upon the surface of the seat, and generating electrical energy for communications. The supplemental restraint system comprises an airbag system connected to a deployment unit in communication with the computerized system. The computerized system consisting of at least one of: CPU, ROM, RAM, EPROM, and CONTROL MODULE.